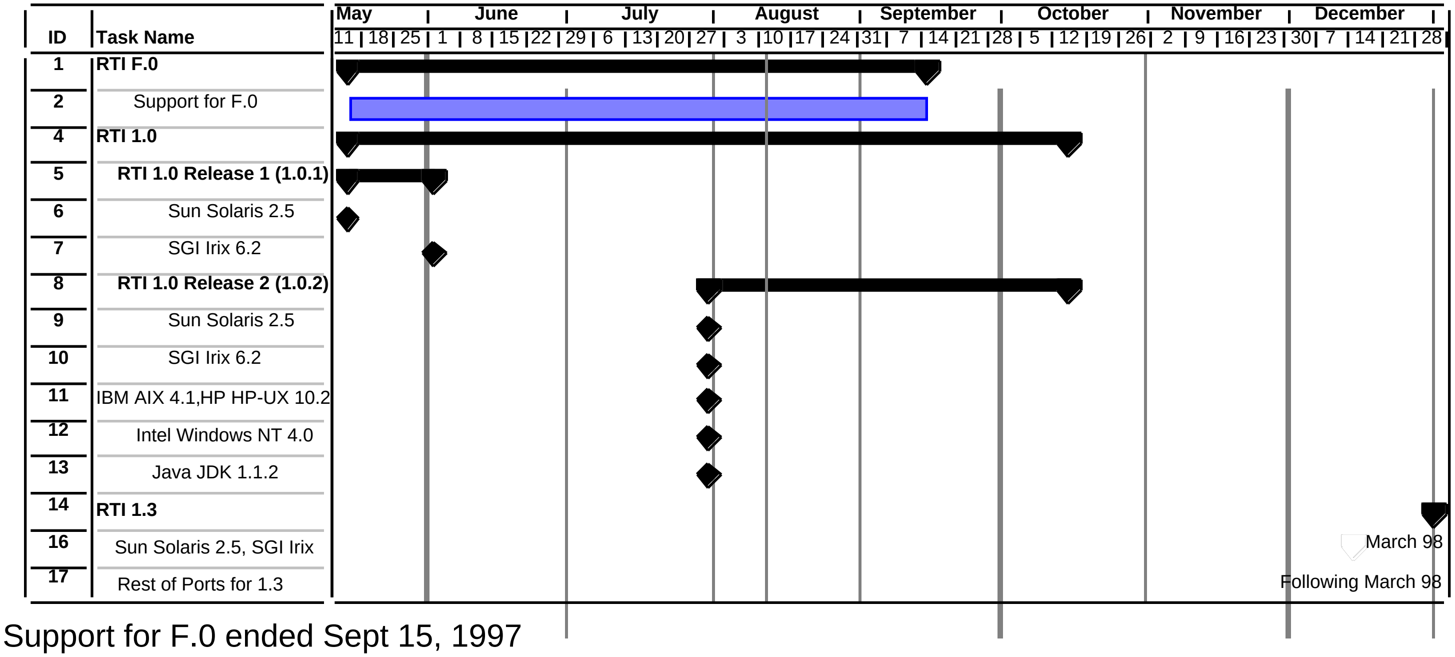
RTI UPDATE

RTI IPT

11 February 1998

RTI 1 Schedule Update



ID	Task Name
1	**RTI F.0**
2	Support for F.0
4	**RTI 1.0**
5	**RTI 1.0 Release 1 (1.0.1)**
6	Sun Solaris 2.5
7	SGI Irix 6.2
8	**RTI 1.0 Release 2 (1.0.2)**
9	Sun Solaris 2.5
10	SGI Irix 6.2
11	IBM AIX 4.1,HP HP-UX 10.2
12	Intel Windows NT 4.0
13	Java JDK 1.1.2
14	**RTI 1.3**
16	Sun Solaris 2.5, SGI Irix
17	Rest of Ports for 1.3

- Support for F.0 ended Sept 15, 1997
- RTI 1.0 Release 1 (1.0.1)
  - Sun Solaris 2.5 : May 15, 1997
  - SGI Irix 6.2 : June 2, 1997
- RTI 1.0 Release 2 (1.0.2)
  - IBM AIX 4.1, HP HP-UX 10.2, Intel Windows NT 4.0, Sun Solaris 2.5, SGI Irix 6.2 : July 31, 1997
- Java JDK 1.1.2 : October, 1997
- RTI 1.0 Release 3 (1.03) (Fixed NT-interoperability, Added Dec Alpha port)
  - IBM AIX 4.1, HP HP-UX 10.2, Intel Windows NT 4.0, Sun Solaris 2.5, SGI Irix 6.2 : Nov 6, 1997
- RTI 1.3 Beta released to limited users in January
- RTI 1.3 To be released in March, Built to interface Spec 1.3
- RTI 2.0 To be released in December, Built to interface Spec 1.3
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1.3 Porting Prioritization

- **We Need Feedback From AMG to Set Priorities**
  - **Send Email to Russ Richardson: rrichardson@std.saic.com**
  - **Please respond by March 4th (3 weeks from today!)**
  - **Please indicate Platform, OS, and Compilers**
  - **Let me know what you are using and will be using!**
- **Platforms**
  - **Sun, SGI**
  - **NT, HP**
  - **DEC, IBM, Linux**
- **OSs**
  - **Initial: Solaris 2.5, Irix 6.2, NT 4.0, HP UX 10.20, AIX 4.1.5...**
  - **Next : Solaris 2.6, Irix 6.4, NT 5.0, etc….**
- **Compilers:**
  - **Initial: Sparcs Works, MipsPro, Visual C++, APEX, GNU...**
  - **Next: Borland C++, ...**

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Benchmark Programs

- Goals of the Benchmark Programs
  - Performance indicators for each of the major categories of inter-federate exchange through the RTI.
  - Simple and unambiguous tools that can be applied by general users of the RTI.
  - Easy to understand metrics that facilitate comparison and investigation of factors influencing federation performance.
  - Source code that can be easily distributed and compiled on all RTI supported platforms.
  - Benchmark programs that are parameterizable using simple command-line arguments and FED file modifications.
- To be Released following the RTI 1.3 Release

Benchmark Programs

- Update Latency Benchmark
  - measures the round trip time(update latency) for an Update Attribute Values(UAV) service call
- Update Throughput Benchmark
  - measures the number of update attribute values per second that are possible for the given system configuration
- Time Synchronization Benchmark
  - measures the number of RTI time step cycles that can be processed by the RTI per second
- Ownership Management Benchmark
  - measures the number of ownership transfers per second per federation

RTI 1.3 Beta Users

- Beta was released Jan 10, 1998
- Six Beta Users
  - MITRE
  - JADS
  - TRAC-Monterey
  - Lockheed-Martin (LADS)
  - Warsim 2000
  - Perceptronics
- Looking for more comments, thanks for the one’s given to date

1.1 to 1.3 Migration Guide

- **Document providing guidance in migrating from 1.1 to 1.3**
  - **Discusses differences in:**
    - **RTI Initialization Data**
    - **Federation Execution Data**
    - **RTI Execution and Federation executive**
    - **Linking and Running**
    - **Constants and Types**
    - **Services**
    - **Example programs**
  - **Present approach and differences are explained for each of these**
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The RTI 1.0 Java Report

11 February 1998

Java RTI 1.0

- Capability
  - All functionality of the C++ implementation of the RTI 1.0
  - Interoperates with all ports of the C++ RTI 1.0
  - Complete rewrite in Java
  - Includes Java Hello World and Test Federate
- Status

- preAlpha	3	June	Process model
- Alpha	11	June	80%
- R1	30	June	100%, no multicast
- R2	8	August	100%, JDK 1.1.2
- R3	20	August	Service log arguments
- R4	17	Sept	Runtime concerns, JDK 1.1.3
- Beta	10	Nov	Addresses all known problems

Java RTI 1.0

- Purpose
  - Insure that the HLA works with evolving technologies such as the Web
  - The Java RTI is an experimental initiative outside the RTI 1.0, 1.3 production line
- Beta test process up until now
  - Beta Java RTI 1.0 distribution began mid November 1997
  - Nine organizations were selected to participate
  - Test reports were collected at the end of the Beta test period in January
  - Beta reports have been evaluated by DMSO

Beta Tester Application

- Please describe the operating hardware platform, the Operating System, and JAVA Environment which would be employed at this proposed Beta test site.
- Please provide a short characterization of the application to be used in this proposed Beta test, including what specific RTI Services would be used in the application.
- Please describe the scope of the proposed Beta test application, including:
  - How many Federates are planned?
  - Estimated number of Objects?
  - Estimated number of Classes and Attributes in the Federation Execution Details (FED)?

Beta Test Report

“As a Beta Test participant, we will ask that you complete test activities and submit a descriptive written summary of the test experience (including a Federation Execution Planners Workbook, the Federation Object Model (FOM), and the Federation Execution Details (FED) file used in the test application) by 1 January 1998. Please address this information via e-mail attachment to Ms. Penny Grammer, DMSO Support at <pgrammer@msis.dmso.mil>.”

Beta Test Conclusions and Plans

- The HLA RTI can be implemented using Java programming language
- The experience to date suggests there is no fundamental barrier to the use of the HLA for web-based applications
- Beta testing would have been improved with better support documentation
- There is a hold on further Java development at this time

The RTI Development Process
RTI 1.3

Mr. Jim Calvin, Lincoln Lab

11 February 1998

What’s Up With RTI 1.3?

- History of the RTI
  - STOW’s RTI-s has been the focus of experience with Data Distribution Management
  - RTI F.0 provided (Dec 1996) the majority of I/F Spec 1.0
  - RTI 1.0 provided (May 1997) all I/F Spec 1.1 services with the exception of DDM
  - RTI 1.3 will provide all I/F Spec 1.3 services (March 1998)
- The approach
  - This summer the RTI team did an experiment which crudely joining the top of RTI 1.0 with the bottom of RTI-s
  - The team learned from this that large parts of both systems are reusable
  - Developed a plan that will facilitate incremental development of RTI 1.3

Results of the RTI-s/RTI 1.0 Experimentation

- **What are the big reusable pieces ?**
  - **RTI-s**
    - **Stream management**
    - **Bundling**
    - **Message segmentation**
  - **RTI 1.0**
    - **Save/Restore framework**
    - **Time management**
    - **Ownership management**
- **What is totally new?**
  - **GRCC Architecture**

Intermediate Steps to RTI 1.3

- Star One 29 August
  - Object database extracted and promoted to a major system object
  - FED manager extended to accept new file format
    - spaces
    - root classes
    - signature
- Star Two 29 August
  - RTI-s RID reader promoted to a major object
  - RTI 1.0 transport manager and FedEX modified to be stream clients
- R1 19 September
  - Merge Star One and Two under a single source management system

More Intermediate Steps

- **R2** **3 October**
  - **Bucket release**
  - **Architecture documentation**
- **R3** **17 October**
  - **Spec 1.2 API, Reduced library dependence**
- **R4** **31 October**
  - **New internal architecture**
- **R5** **21 November**
  - **First DDM**
  - **New Time Services**
  - **Revised Ownership management**

The Home Stretch

- R6 19 December
  - All but new federation management services
- R7 23 January
  - Logging and replay design
  - Save and restore design
  - C++ API extended to match Spec 1.3
- R8 13 February
  - New save and restore services
  - Passive subscription
  - New synchronization services
- Final Delivery 16 March
  - Performance characterization and improvement
  - Incorporates fixes for bugs found during IPT testing and porting